INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/22889

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :Please See Extra Sheet.
US CL :Please See Extra Sheet.
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 536/23.1, 23.5, 24.31, 24.33, 435/6, 91.2, 810, 530/388.2, 424/130.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Extra Sheet.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JENNE et al. cDNA cloning of granzyme C, a granule-associated serine protease of cytolytic T lymphocytes. J. of Immunol. 01 January 1988, Vol. 140, No.1, pages 318-323, especially pages 320-321. And attached GeneEmbl Accession No. M18459.	3, 4
X	Database Genbank on EST, Accession No. AA718318 MARRA et al. 'The washU-HHMI Mouse EST Project'. 29 December 1997.	3, 4
X	ROSENBERG et al. Structure of the murine mac-2 gene: Splice variants encode proteins lacking functional signal peptides. J. Biol. Chem. 15 June 1993, Vol. 268, No. 17, pages 12393-12400, especially page 12396. And attached GenEmbl Accession No. L08649.	3, 4

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 01 NOVEMBER 2000	Date of mailing of the international search report 05 DEC 2000
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer ALEXANDER H. SPIEGLER Telephone No. (703) 308-1235

Form PCT/ISA/210 (second sheet)(July 1992)*

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International application No.
PCT/US00/22889

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	TAKETANI et al. Induction of peripheral-type benzodiazepine receptors during differentiation of mouse erythroleukemia cells: A possible involvement of these receptors in heme biosyntheses. J. Bio. Chem. 11 March 1994, Vol. 269, No. 10, pages 7527-7531, especially page 7528. And attached GenEmbl Accession No. D21207.	3, 4
X	MOSLEY et al. The murine interleukin-4 receptor: molecular cloning and characterization bound forms. Cell. 20 October 1989, Vol. 59, pages 335-348, especially page 339. And attached GenEmbl Accession No. M27959.	3, 4
X	BONALDO et al. 'Normalization and subtraction: two approaches to facilitate gene discovery'. Genome Research. 1996, Vol. 6, No. 9, pages 791-806, whole document. And attached EST Accession No. AW045192.	1, 3, 4
X	Database Genbank on EST, Accession No. AA259694. MARRA et al. 'The WashU-HHMI Mouse EST Project'. 18 March 1997.	3, 4
X	Database Genbank on EST, Accession No. AA 423053. MARRA et al. 'The WashU-HHMI Mouse EST Project'. 16 October 1997.	3, 4
X	Database Genbank on EST, Accession No. AI591551. MARRA et al. 'The WashU-NCI Mouse EST Project' 21 April 1999.	3, 4
X	Database Genbank on EST, Accession No. A1315259. MARRA et al. 'The WahU-HHMI Mouse EST Project'. 17 December 1998.	3, 4
X	Database Genbank on EST, Accession No. AV341888. KONNO et al. 'RIKEN Mouse EST's.' 08 November 1999.	3, 4
X	BONALDO et al. Normalization and subtraction: two approaches to facilitate gene discovery. Genome Research. Vol. 6, No. 9, pages 791-806, whole document. And attached EST Accession No. AW494237.	3, 4
X	Database Genbank on EST, Accession No. AI661692. MARRA et al. 'The WashU-NCI Mouse EST Project. 10 May 1999.	3, 4
X	BONALDO et al. Normalization and subtraction: two approaches to facilitate gene discovery. Genome Research. 1996, Vol. 6, No. 9, pages 791-806, whole document. And attached EST Accession No. AI854173.	3, 4
X	Database Genbank on EST, Accession No. AA64866. MARRA et al. 'The WashU-HHMI Mouse EST Project.' 28 October 1997.	1, 3, 4

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Database Genbank on EST, Accession No. AA403472. MARRA et al. 'The WashU-HHMI Mouse EST Project'. 29 April 1997.	3, 4
X	FERNANDEZ et al. Sequence and chromosomal localization of mouse annexin XI. Genomics. 1996, Vol. 37, No. 3, pages 366-374, especially page 370. And attached GenEmbl Accession No. U65986.	3, 4
X	VAN ETTEN et al. Precise localization and nucleotide sequence of the two mouse mitochondrial rRNA genes and three immediately adjacent novel tRNA genes. Cell. 1980, Vol. 22, No. 1, pages 157-170, especially page 159. And attached GenEmbl Accession No. V00665.	3, 4
X	Database Genbank on EST, Accession No. AI096476. NCI-CGAP. 'National Cancer Institute, Cancer Genome Anatomy Project (CGAP), Tumor Gene Index'. 1999.	3, 4
X	WEI et al. The COP9 complex is conserved between plants and mammals and is related to the 26S proteasome regulatory complex. Curr. Biol. 03 September 1998, Vol. 8, No. 16, pages 919-922, especially pages 920-921. And attached GenEmbl Accession No. AF071314.	3, 4
X	PETZELT et al. The centrosomal protein centrosomin A and the nuclear protein centrosomin B derived from one gene by post-transcriptional processes involving RNA editing. J. Cell. Sci. 1997, Vol. 110, No. 20, pages 2573-2578, especially pages 2575-2576. And Attached GenEmbl Accession No. X84651.	3, 4
X	US 4,874,845 A (SAITO et al) 17 October 1989, whole document.	1-16, 18-21, 23, 33, 35-36
Y		17, 36, 38-43
X	WANG et al. Identification of novel stress-induced genes downstream of chop. EMBO J. 15 August 1998, Vol 17, No. 13, pages 3619-3630, whole document. And attached GenEmbl Accession No. AF059486.	1-20
Y		38-43

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International application No.
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Database Genbank on EST, Accession No. AA855970. MARRA et al. The WashU-HHMI Mouse EST project. 06 March 1998	3, 4

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Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Extra Sheet.

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

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PCT/US00/22889

A. CLASSIFICATION OF SUBJECT MATTER:
IPC (7): C07H 21/02, 21/04, C12Q 1/68, C12P 19/34, C07K 16/00, A61K 39/395
A. CLASSIFICATION OF SUBJECT MATTER:
US CL :

536/23.1, 23.5, 24.31, 24.33, 435/6, 91.2, 810, 530/388.2, 424/130.1

B. FIELDS SEARCHED
Electronic data bases consulted (Name of data base and where practicable terms used):

CA Plus, Medline, Biotechds, Embase, Biosis, WEST, Sequence Search

search terms: probes, primers, treatment, prevention, ataxia telangiectastia

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING
This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

Group 1: Claims 1, 3-7, 9-14, 25-26, 35, 37, 42 and 43, drawn to nucleic acids of any ten SEQ ID NO, vectors, and methods of making host cells, and methods of diagnosing a pathological condition.

Group 2: Claims 1, 3-7, 9-14, 25-26, 35, 37, 42 and 43, drawn to nucleic acids of any four additional SEQ ID NO, vectors, and methods of making host cells, and methods of diagnosing a pathological condition.

Group 3: Claims 1, 3-7, 9-14, 25-26, 35, 37, 42 and 43, drawn to nucleic acids of any four additional SEQ ID NO, vectors, and methods of making host cells, and methods of diagnosing a pathological condition.

Group 4: Claims 1, 3-7, 9-14, 25-26, 35, 37, 42 and 43, drawn to nucleic acids of any four additional SEQ ID NO, vectors, and methods of making host cells, and methods of diagnosing a pathological condition.

Group 5: Claims 1, 3-7, 9-14, 25-26, 35, 37, 42 and 43, drawn to nucleic acids of any additional SEQ ID NO, vectors, and methods of making host cells, and methods of diagnosing a pathological condition

Group 6: Claims 2, 8, 15, 19-20, and 27-30 drawn to polypeptides encoded by the nucleic acids of any ten SEQ ID NO, methods of making polypeptides, and methods of diagnosing a pathological condition using a polypeptide.

Group 7: Claims 2, 8, 15, 19-20, and 27-30 drawn to polypeptides encoded by the nucleic acids of any four additional SEQ ID NO, methods of making polypeptides, and methods of diagnosing a pathological condition using a polypeptide.

Group 8: Claims 2, 8, 15, 19-20, and 27-30 drawn to polypeptides encoded by the nucleic acids of any four additional SEQ ID NO, methods of making polypeptides, and methods of diagnosing a pathological condition using a polypeptide.

Group 9: Claims 2, 8, 15, 19-20, and 27-30 drawn to polypeptides encoded by the nucleic acids of any four additional SEQ ID NO, methods of making polypeptides, and methods of diagnosing a pathological condition using a polypeptide.

Group 10: Claims 2, 8, 15, 19-20, and 27-30 drawn to polypeptides encoded by the nucleic acid of any additional SEQ ID NO, methods of making polypeptides, and methods of diagnosing a pathological condition using a polypeptide.

Group 11: Claims 16-18, and 38-41 drawn to antibodies and methods of using antibodies of polypeptides encoded.by the nucleic acids of any ten SEQ ID NO.

Group 12: Claims 16-18, and 38-41 drawn to antibodies and methods of using antibodies of polypeptides encoded.by the nucleic acids of any four additional SEQ ID NO.

Group 13: Claims 16-18, and 38-41 drawn to antibodies and methods of using antibodies of polypeptides encoded.by the nucleic acids of any four additional SEQ ID NO.

Group 14: Claims 16-18, and 38-41 drawn to antibodies and methods of using antibodies of polypeptides encoded.by the nucleic acids of any four additional SEQ ID NO.

Group 15: Claims 16-18, and 38-41 drawn to antibodies and methods of using antibodies of polypeptides encoded.by the nucleic acid of any additional SEQ ID NO.

Group 16: Claims 21 and 22, drawn to methods for preventing and treating a medical condition using polynucleotides of any ten SEQ ID NO.

Group 17: Claims 21 and 22, drawn to methods for preventing and treating a medical condition using polynucleotides of any four additional SEQ ID NO.

Group 18: Claims 21 and 22, drawn to methods for preventing and treating a medical condition using polynucleotides of any four additional SEQ ID NO.

Group 19: Claims 21 and 22, drawn to methods for preventing and treating a medical condition using polynucleotides of any four additional SEQ ID NO.

Group 20: Claims 21 and 22, drawn to methods for preventing and treating a medical condition using polynucleotides of any additional SEQ ID NO.

Group 21: Claims 21 and 22, drawn to methods for preventing and treating a medical condition using polypeptides encoded by the nucleic acids of any ten SEQ ID NO.

Group 22: Claims 21 and 22, drawn to methods for preventing and treating a medical condition using polypeptides encoded by the nucleic acids of any four additional SEQ ID NO.

Group 23: Claims 21 and 22, drawn to methods for preventing and treating a medical condition using polypeptides encoded by the nucleic acids of any four additional SEQ ID NO.

Group 24: Claims 21 and 22, drawn to methods for preventing and treating a medical condition using polypeptides encoded by the nucleic acids of any four additional SEQ ID NO.

Group 25: Claims 21 and 22, drawn to methods for preventing and treating a medical condition using polypeptides encoded by the nucleic acid of any additional SEQ ID NO.

Group 26: 23-24, drawn to methods for preventing and treating a medical condition using antibodies of polypeptides encoded.by the nucleic acids of any ten SEQ ID NO.

Group 27: 23-24, drawn to methods for preventing and treating a medical condition using antibodies of polypeptides encoded.by the nucleic acids of any four additional SEQ ID NO.

Group 28: 23-24, drawn to methods for preventing and treating a medical condition using antibodies of polypeptides encoded by the nucleic acids of any four additional SEQ ID NO.

Group 29: 23-24, drawn to methods for preventing and treating a medical condition using antibodies of polypeptides encoded by the nucleic acids of any four additional SEQ ID NO.

Group 30: 23-24, drawn to methods for preventing and treating a medical condition using antibodies of polypeptides encoded by the nucleic acid of any additional SEQ ID NO.

Group 31: Claim 31, drawn to the manufacture of a medicament for the treatment of ataxia telangiectasia using polynucleotides of any ten SEQ ID NO.

Group 32: Claim 31, drawn to the manufacture of a medicament for the treatment of ataxia telangiectasia using polynucleotides of any four additional SEQ ID NO.

Group 33: Claim 31, drawn to the manufacture of a medicament for the treatment of ataxia telangiectasia using polynucleotides of any four additional SEQ ID NO.

Group 34: Claim 31, drawn to the manufacture of a medicament for the treatment of ataxia telangiectasia using polynucleotides of any four additional SEQ ID NO.

Group 35: Claim 31, drawn to the manufacture of a medicament for the treatment of ataxia telangiectasia using

polynucleotides of any additional SEQ ID NO.

Group 36: Claim 31, drawn to the manufacture of a medicament for the treatment of ataxia telangiectasia using polypeptides encoded by the nucleic acids of any ten SEQ ID NO.

Group 37: Claim 31, drawn to the manufacture of a medicament for the treatment of ataxia telangiectasia using polypeptides encoded by the nucleic acids of any four additional SEQ ID NO.

Group 38: Claim 31, drawn to the manufacture of a medicament for the treatment of ataxia telangiectasia using polypeptides encoded by the nucleic acids of any four additional SEQ ID NO.

Group 39: Claim 31, drawn to the manufacture of a medicament for the treatment of ataxia telangiectasia using polypeptides encoded by the nucleic acids of any four additional SEQ ID NO.

Group 40: Claim 31, drawn to the manufacture of a medicament for the treatment of ataxia telangiectasia using polypeptides encoded by the nucleic acid of any additional SEQ ID NO.

Group 41: Claim 32, drawn to the manufacture of a medicament for the treatment of ataxia telangiectasia using antibodies of polypeptides encoded by the nucleic acids of any ten SEQ ID NO.

Group 42: Claim 32, drawn to the manufacture of a medicament for the treatment of ataxia telangiectasia using antibodies of polypeptides encoded by the nucleic acids of any four additional SEQ ID NO.

Group 43: Claim 32, drawn to the manufacture of a medicament for the treatment of ataxia telangiectasia using antibodies of polypeptides encoded by the nucleic acids of any four additional SEQ ID NO.

Group 44: Claim 32, drawn to the manufacture of a medicament for the treatment of ataxia telangiectasia using antibodies of polypeptides encoded by the nucleic acids of any four additional SEQ ID NO.

Group 45: Claim 32, drawn to the manufacture of a medicament for the treatment of ataxia telangiectasia using antibodies of polypeptides encoded by the nucleic acid of any additional SEQ ID NO.

Group 46: Claim 33, drawn to the method of identifying a binding partner to a polypeptide encoded by the nucleic acids of any ten SEQ ID NO.

Group 47: Claim 33, drawn to the method of identifying a binding partner to a polypeptide encoded by the nucleic acids of any four additional SEQ ID NO.

Group 48: Claim 33, drawn to the method of identifying a binding partner to a polypeptide encoded by the nucleic acids of any four additional SEQ ID NO.

Group 49: Claim 33, drawn to the method of identifying a binding partner to a polypeptide encoded by the nucleic acids of any four additional SEQ ID NO.

Group 50: Claim 33, drawn to the method of identifying a binding partner to a polypeptide encoded by the nucleic acid of any additional SEQ ID NO.

Group 51: Claim 36, drawn to identifying an activity of an expressed polypeptide in a biological assay, encoded by the nucleic acids of any ten SEQ ID NO.

Group 52: Claim 36, drawn to identifying an activity of an expressed polypeptide in a biological assay, encoded by the nucleic acids of any four additional SEQ ID NO.

Group 53: Claim 36, drawn to identifying an activity of an expressed polypeptide in a biological assay, encoded by the nucleic acids of any four additional SEQ ID NO

Group 54: Claim 36, drawn to identifying an activity of an expressed polypeptide in a biological assay, encoded by the nucleic acids of any four additional SEQ ID NO.

Group 55: Claim 36, drawn to identifying an activity of an expressed polypeptide in a biological assay, encoded by the nucleic acids of any additional SEQ ID NO.

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Claim 1 recites multiple sequences. Applicant is entitled to examination of 10 of these sequences. Applicant may pay for search of additional sequences in groups of four. (See Federal Register Publication 10/17/96) (four additional groups).

Claim 2 recites multiple sequences. Applicant is entitled to examination of 10 of these sequences. Applicant may pay for search of additional sequences in groups of four. (See Federal Register Publication 10/17/96) (four additional groups)

The special technical feature of groups 1-5, is considered to be nucleic acids, vectors, methods of making host cells, and methods of diagnosing a pathological condition using polynucleotides. (i.e. polynucleotides are composed of different nucleotides linked in phosphodiester bonds and arranged in space as a double helix and may be utilized in specific hybridization assays).

The special technical feature of groups 6-10, is considered to be polypeptides, methods of making polypeptides, and methods of diagnosing a pathological condition. Each polypeptide having different primary, secondary, and tertiary structure, and having different functional/biological activities.

The special technical feature of groups 11-15, is considered to be the antibodies and methods of using the antibodies. Each antibody is composed of a distinct amino acid sequences.

The special technical feature of groups 16-20, is considered to be methods for preventing and treating a medical condition using polynucleotides. These methods have different method steps, use different reagents, and have a different objection.

The special technical feature of groups 21-25 is considered to be methods for preventing and treating a medical condition using polypeptides. These methods have different method steps, use different reagents, and have a different objection.

The special technical feature of groups 26-30, is considered to be methods for preventing and treating a medical condition using antibodies. These methods have different method steps, use different reagents, and have a different objection.

The special feature of groups 36-40, is considered to be a manufacture of a medicament for the treatment of ataxia telangiectasia using different polypeptides.

The special feature of groups 41-45 is considered to be a manufacture of a medicament for the treatment of ataxia telangiectasia using different antibodies.

The special feature of groups 46-50 is considered to be methods of identifying a binding partner to a polypeptide. These methods have different method steps, use different reagents, and have a different objection.

The special feature of groups 51-55, is considered to be methods of identifying an activity of an expressed polypeptide. These methods have different method steps, use different reagents, and have a different objection.

Furthermore, claims 1 and 2, recite multiple sequences, which are considered to lack unity among one another because they are structurally different and encode different proteins. As such, and as noted above, applicant is entitled to the examination of ten of these sequences and then may pay for the examination of additional sequences in groups of four.